

IN THE CLAIMS:

1-3. (Cancelled)

4. (Currently Amended) The An electrostatic actuator according to claim 3,
wherein comprising:

a movable element which is provided with electrodes; and
a stator which is provided with driving electrodes and inductive electrodes for
generating electrostatic induction in the electrodes of the movable element, wherein
the electrodes of the movable element includes a driven electrode part provided
at a position opposite to the driving electrodes of the stator, and an induced electrode part
provided at a position opposite to the inductive electrodes of the stator; and
the movable element is displaced relatively to the stator by generating
electrostatic force between the driving electrodes of the stator and the driven electrode part in
the movable element in which the electrostatic induction is generated, by applying a voltage
to the driving electrodes of the stator, while generating electrostatic induction in the electrodes
of the movable element through the induced electrode part by applying a voltage to the
inductive electrode of the stator;

wherein the electrodes of the movable element includes a first electrode and a
second electrode which are shaped substantially comb-like and interdigitated; the induced
electrode part corresponds to the base of the substantially comb-like electrode; and the driven
electrode part corresponds to the comb tooth including the comb tooth end of the substantially
comb-like electrode;

wherein the movable element is placed on the front surface of the stator and
the movable element which has no electrical connection is displaced by applying a first AC

voltage to the inductive electrodes of the stator and a second AC voltage to the driving electrodes of the stator; and

wherein the stator has the inductive electrodes and the driving electrodes connected and placed by four pieces with a predetermined cycle;

the movable element has the first electrode and the second electrode which are interdigitated;

the arrangement pitch of the first and second electrodes of the movable element is double the arrangement pitch of the driving electrodes of the stator; and

a first traveling wave is generated in the electrode array of the movable element by generating electric charges in the first and second electrodes of the movable element by applying the first AC voltage to the inductive electrode of the stator, and a second traveling wave is generated in the driving electrode array by applying the four-phase second AC voltage to the driving electrodes of the stator, and the movable element is displaced according to the change with time of the first and second traveling waves.

5. (Original) The electrostatic actuator according to claim 4, wherein the ratio of an electrode width to an arrangement pitch length of the electrode array comprising the first and second electrodes of the movable element is 1:3 to 2:3.

6. (Cancelled)

7. (Currently Amended) The An electrostatic actuator according to claim 6, comprising:

a movable element which is provided with electrodes; and

a stator which is provided with driving electrodes and inductive electrodes for generating electrostatic induction in the electrodes of the movable element, wherein the electrodes of the movable element includes a driven electrode part provided at a position opposite to the driving electrodes of the stator, and an induced electrode part provided at a position opposite to the inductive electrodes of the stator; and

the movable element is displaced relatively to the stator by generating electrostatic force between the driving electrodes of the stator and the driven electrode part in the movable element in which the electrostatic induction is generated, by applying a voltage to the driving electrodes of the stator, while generating electrostatic induction in the electrodes of the movable element through the induced electrode part by applying a voltage to the inductive electrode of the stator;

wherein the electrodes of the movable element includes a first electrode and a second electrode which are shaped substantially comb-like and interdigitated; the induced electrode part corresponds to the base of the substantially comb-like electrode; and the driven electrode part corresponds to the comb tooth including the comb tooth end of the substantially comb-like electrode;

wherein the movable element is placed on the front surface of the stator and the movable element which has no electrical connection is displaced by applying a first AC voltage to the inductive electrodes of the stator and a second AC voltage to the driving electrodes of the stator;

wherein the speed of the movable element is controlled by the frequency difference between the first and second AC voltages; and

wherein the movable element is stopped by setting the frequency difference between the first and second AC voltages to zero.

8. (Currently Amended) ~~The An~~ electrostatic actuator according to claim 3, wherein comprising:

a movable element which is provided with electrodes; and
a stator which is provided with driving electrodes and inductive electrodes for
generating electrostatic induction in the electrodes of the movable element, wherein
the electrodes of the movable element includes a driven electrode part provided
at a position opposite to the driving electrodes of the stator, and an induced electrode part
provided at a position opposite to the inductive electrodes of the stator; and
the movable element is displaced relatively to the stator by generating
electrostatic force between the driving electrodes of the stator and the driven electrode part in
the movable element in which the electrostatic induction is generated, by applying a voltage
to the driving electrodes of the stator, while generating electrostatic induction in the electrodes
of the movable element through the induced electrode part by applying a voltage to the
inductive electrode of the stator;

wherein the electrodes of the movable element includes a first electrode and a
second electrode which are shaped substantially comb-like and interdigitated; the induced
electrode part corresponds to the base of the substantially comb-like electrode; and the driven
electrode part corresponds to the comb tooth including the comb tooth end of the substantially
comb-like electrode;

wherein the movable element is placed on the front surface of the stator and
the movable element which has no electrical connection is displaced by applying a first AC

voltage to the inductive electrodes of the stator and a second AC voltage to the driving electrodes of the stator; and

wherein the stator has at least an array of driving electrodes arranged with a predetermined pitch on the surface of insulating base material, and a first to fourth common lines to connect the driving electrodes by four pieces;

the electrostatic actuator further comprising:

a first transformer which generates AC potentials of 0-degree phase and 180-degree phase in the arrangement space of the driving electrodes of the stator; and

a second transformer which generates AC potentials of 90-degree phase and 270-degree phase in the arrangement space of the driving electrodes of the stator; and

the phase of the voltage applied to the primary side of the first transformer is different by 90 degrees from the phase of the voltage applied to the primary side of the second transformer.

9. (Currently Amended) The electrostatic actuator according to claim [[3]] 4, wherein

the voltage applied to the driving electrode of the stator is a multi-phase AC voltage with three or more phases; and

one cycle pitch composed of the first electrode and second electrode of the movable element is equal to one cycle pitch of the driving electrodes of the stator.

10. (Currently Amended) The electrostatic actuator according to claim [[2]] 4, further comprising:

a first connection member which connects a plurality of movable elements; and a second connection member which connects a plurality of stators, and that

the plurality of movable elements and stators are stacked through the first and second connection members, and the plurality of movable elements and first connection member are moved.

11. (Currently Amended) The electrostatic actuator according to claim [[2]] 4, wherein

the movable element is a rotating rotor in which a first electrode with radially spreading comb-like end electrodes, and a second electrode with centripetally arranged comb-like end electrodes are interdigitated; and

the stator is composed of two or more inductive electrodes placed on the circumference of a disk, and driving electrodes connected and arranged by multiple numbers with a predetermined cycle angle.

12. (Original) The electrostatic actuator according to claim 11, wherein the rotor and stator are stacked to be multiple layers centering around a common rotation shaft, and the rotation torque generated by a plurality of rotors is taken through the common rotation shaft.

13. (Currently Amended) The electrostatic actuator according to claim [[2]] 4, wherein

the movable element is composed of a first electrode having a comb-tooth shape and a second electrode having the substantially same shape which are interdigitated, and placed on the surface of a cylinder so that the directions of the first and second electrodes are aligned as a straight line, the movable element moving parallel on a cylinder shaft; and

the stator is composed of driving electrodes arranged to be aligned with two or more inductive electrodes placed on the straight lines on a cylinder.

14. (Currently Amended) The electrostatic actuator according to claim [[2]] 4, wherein the movable element is a circumferentially rotating movable element composed of a first electrode having a comb-tooth shape and a second electrode having the substantially same shape which are interdigitated and placed on the surface of a cylinder so that the directions of the first and second electrodes are aligned as a circle; and

the stator is composed of two or more inductive electrodes placed on the circumference of a cylinder and driving electrodes arranged to be aligned with the inductive electrodes as a circumference.

15-17. (Cancelled)

18. (Currently Amended) The An electrostatic actuator according to claim 17, wherein comprising:

a stator having two or more inductive electrodes arranged one of substantially parallel and concentric and a plurality of driving electrodes arranged with a predetermined cycle;

a movable element having at least two combined electrode structures; and
a displacement means for displacing the movable element by generating electric charges in the electrodes of the movable element via the inductive electrodes of the stator, and generating electrostatic force between the electric charges and the driving electrodes of the stator;

wherein the movable element is placed on the front surface of the stator and

the displacement means displaces the movable element which has no electrical connection, by applying a first AC voltage to the inductive electrode of the stator and a second AC voltage to the driving electrodes of the stator; and

wherein the stator has the inductive electrodes and the driving electrodes connected and placed by four pieces with a predetermined cycle;

the movable element has a first electrode and second electrode which are interdigitated;

an arrangement pitch of the first and a second electrodes of the movable element is double an arrangement pitch of the driving electrodes of the stator; and

the displacement means generates a first traveling wave in the electrode array of the movable element by generating electric charges in the first and second electrodes of the movable element by applying the first AC voltage to the inductive electrodes of the stator, generates a second traveling wave in the array of the driving electrodes by applying the four-phase second AC voltage to the driving electrodes of the stator, and displaces the movable element according to the change with time of the first and second traveling waves.

19. (Cancelled)